REMARKS

Claims 1-8 and 10-64 remain in the application for consideration. In view of the following remarks, Applicant respectfully requests withdrawal of the rejections and forwarding of the application onto issuance.

Drawing Objections

Applicant notes that the drawings have been objected to by the Official Draftsperson. Applicant submits herewith drawing corrections for those drawings identified by the Official Draftsperson.

§ 102 Rejections

Claims 1, 24-26, 37-39, 48-49, 54-59, and 62-64 stand rejected under 35 U.S.C. § 102(3) as being anticipated by U.S. Patent No. 6,581,062 to Draper et al (hereinafter "Draper").

§103 Rejections

Claims 2-8, 10-19, 27-28, 30-31, 40-43 and 60-61 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Draper in view of U.S. Patent No. 5,295,261 to Simonetti.

Claims 20-23, 29, 32-36, 44-47, and 50-53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Draper in view of U.S. Patent No. 6,151,601 to Papierniak et al. (hereinafter "Papierniak").

Applicant's Disclosure

 Applicant's disclosure notes that there is an unsolved need to be able to create context-aware computing in which computing devices can participate in their particular context. In specific circumstances, there are unsolved needs to provide relational position awareness among physical locations in both public and private views of the world.

Applicant's claimed subject matter relates to context aware computing systems and methods. In various embodiments, one or more hierarchical tree structures are defined that uniquely identify geographical divisions of the Earth and/or physical or logical entities. Each tree has multiple nodes and at least one node from each tree is linked. Goods and services can be associated with individual nodes on the tree such that the nodes provide a universal reference when attempting to locate or consume the goods or services. By knowing where a device is located within a hierarchical structure, in at least some embodiments, the applications can present location-dependent goods or services to the user. Thus, a user is able to actively participate in their current computing environment.

The Draper Reference

Draper's disclosure relates to a completely different subject matter – that is, the storage of data. Draper discloses a method and apparatus for storing semi-structured data in a structured manner. Semi-structured data might be XML encoded data, which is then stored in an SQL database, a form of structured data storage. Draper utilizes a mapper to generate a structured organization to store the collection of semi-structured data. The mapper further collaterally generates a description of how the semi-structured data are stored under the structured organization.

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Draper's disclosure can perhaps best be understood by reference to FIGS. 2a, 2b, and 3. FIGS. 2a-2b illustrate an example of semi-structured data and its logical representation. As illustrated, semi-structured data 54' includes a number of entities or data elements, each delineated by a pair of tags, e.g. entity A by tags <entity A> and </entity A>, entity B by tags <entity B> and </entity B>, and so forth. Some entities, like entities F and H have multiple instantiations. The entities/instantiations have an hierarchical relationship to each other; and may be logically represented by tree structure 60, having corresponding number of nodes, one for each entity/instantiation, and edges interconnecting the nodes whose represented entities/instantiations are direct ancestors/descendants of each other, as shown.

Draper's FIG. 3 illustrates a structured organization for storing the semistructured data of FIGS. 2a-2b. As illustrated, structured organization 52' includes four relational tables 62-68. Table 62 includes one column each for storing identifiers of entities A, B, C, D, E, and G, and data for entities C and D. Table 64 includes one column each for storing identifiers for entities E and F, and data for entities F, whereas table 66 includes one column each for storing identifiers for entities G and F, and data for entities F. Similarly, table 68 includes one column each for storing identifiers for entities A, H and I, and data for entity I. The organization of these relational tables is characterized by the fact that entities having the possibility of multiple instantiations are stored in separate tables. The approach is said to be a normalized organization of the relational tables.

Applicant respectfully submits that Draper's methods and systems for storing data are in no way analogous to Applicant's claimed subject matter relating to context-aware computing. In fact, Draper's disclosure seems to have no

relevance to context-aware computing at all. Furthermore, Draper does not disclose or suggest any relationship between his methods of storing data and any attempt to connect a user with goods or services.

Claims 1-23

Claim 1 recites a system for determining context comprising [emphasis added]:

- one or more computer-readable media; and
- a hierarchical tree structure resident on the media and comprising multiple nodes each of which represent geographical divisions of the Earth, individual nodes comprising an entity identification (EID) that is unique to the node, EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having EIDs that are unique for the associated node.

In making out the rejection of this claim, the Office argues that Draper discloses EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node. The Office cites to column 5, lines 38-55, and column 6, lines 40-56, reproduced below, in support of its argument.

FIGS. 6a-6b illustrate an example semi-structured data 54" and its logical representation. The example "directory" semi-structured data 54", delineated by the <directory> and </directory> tags 100 and 150, as illustrated in FIG. 6a, includes the entities "person", "name", "first name", "last name", "home", "address", "line1", "city", "state", "zip", "phone" (in the context of "home"), "work", and "phone" (in the context of "work"), delineated by the respective tag pairs, i.e. 102 and 148, 104 and 128, and so forth. The example "directory" semi-structured data may be logically represented by tree structure 60' of FIG. 6b. Tree structure 60' includes root node "directory" 162, "person" node 164, "name" node 166, "first name" node 168, "last

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name" node 170, "home" node 172, "address" node 174, "line 1" node 176, "city" node 178, "state" node 180, "zip" node 182, "home phone" node 184, "work" node 186, and "work phone" node 188. *Col. 5, lines 38-55.*

FIG. 9 illustrates the operational flow of mapper 50 for generating semi-structured organization 54 for structured data 52. At 202, mapper 50 transforms structured data 52 adding corresponding companion columns to the tables to store entity identifiers for the stored entity data. In one embodiment, mapper 50 also adds corresponding columns to the tables to store a composite key formed with the access keys of the tables. For example, in a table, having two columns storing the last and first names of persons as accessing keys, a column is added to store a composite key formed with the last and first names of the persons. At 204, mapper 50 constructs a logical tree structure similar to the ones illustrated in FIG. 2b and 6b, based on the columns storing entity identifiers. At 206, mapper 50 creates meta table 56 as described earlier. At 208, mapper 50 generates semi-structured organization 54 using the generated logical tree structure. *Col. 6, lines 40-56*.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even remotely suggests "individual nodes comprising an entity identification (EID) that is unique to the node, EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node." As discussed above, Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database. Draper does not disclose or suggest matter in which EIDs serve as a basis by which attributes can be assigned to goods or services associated with an individual node. Accordingly, for at least this reason, claim 1 is allowable.

Claims 2-8 and 10-23 depend from claim 1 and are allowable as depending from an allowable base claim. These claims are also allowable for their own

recited features which, in combination with those recited in claim 1, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. Given the allowability of these claims, the rejection of claims 2-8 and 10-19 over the combination with Simonetti is not seen to add anything of significance.

Claims 24-36

Claim 24 recites a system for determining context comprising [emphasis added]:

- one or more computer-readable media;
- a first hierarchical tree structure having multiple nodes associated with a first context;
- at least one second hierarchical tree structure having multiple nodes associated with a second context; and
- at least one node from the at least one second hierarchical tree structure being linked with one node on the first hierarchical tree structure by a link that is configured to enable a complete context to be derived from the first and second contexts, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,
- said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office again cites to column 5, lines 38-55, and column 6, lines 40-56, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database. Draper does not disclose or suggest matter in which unique IDs serve as a basis by which attributes can be assigned to goods or services. Accordingly, for at least this reason, claim 24 is allowable.

Claims 25-36 depend from claim 24 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 24, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claims 27-28 and 30-31 over the combination with Simonetti, and claims 29 and 32-36 over the combination with Papierniak, is not seen to add anything of significance.

Claims 37-47

Claim 37 recites a method of determining context comprising [emphasis added]:

accessing first and one or more second hierarchical tree structures that are resident on one or more computer-readable media, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first context, the nodes of the one or more second hierarchical tree structures being associated with a second context; and traversing multiple nodes of at least one of the tree structures to

derive a context, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,

said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office apparently cites again to column 5, lines 38-55, and column 6, lines 40-56, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database. For at least this reason, claim 37 is allowable.

Claims 38-47 depend from claim 37 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 37, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claims 40-43 over the combination with Simonetti, and claims 44-47 over the combination with Papierniak, is not seen to add anything of significance.

Claims 48-53

Claim 48 is directed to a computer-readable medium having instructions that cause a computing device to [emphasis added]:

access first and second hierarchical tree structures, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first location context, the nodes of the second hierarchical tree structure being associated with a second location context, at least one node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure; and

traverse at least one node of each tree structure to derive a location context, at least one node in a traversal path that leads to a root node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office apparently cites again to column 5, lines 38-55, and column 6, lines 40-56, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that disclose or even suggest individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database. For at least this reason, claim 48 is allowable.

Claims 49-53 depend from claim 48 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 48, are neither disclosed

nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claims 50-53 over the combination with Papierniak is not seen to add anything of significance.

Claims 54-56

Claim 54 recites a method of locating goods or services comprising [emphasis added]:

- defining a hierarchical tree structure comprising multiple nodes that each can define a physical or logical entity, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;
- associating one or more goods or services with one or more of the nodes; and
- traversing one or more of the multiple nodes to discover a good or service.

In making out the rejection of this claim, the Office argues that Draper discloses associating one or more goods or services with one or more nodes and traversing one or more of the multiple nodes to discover a good or service. The Office cites to figure 2B, figure 5, figure 6B, and column 5, lines 1-12, reproduced below, in support of its argument.

FIG. 5 illustrates the operation flow for mapper 50, in accordance with one embodiment. In this embodiment, it is assumed that structured organization 52 is generated in the normalized approach described earlier, referencing FIG. 3, and meta-table 56' of FIG. 4 is employed for description 56. As illustrated, at 82, mapper 50 traverses a logical representation of semi-structured data 54 assigning identifiers to all entities (and if applicable, their multiple

instantiations). At the same, mapper 50 also keeps track of all entities with multiple instantiations, as well as setting the applicable flags and recording the applicable annotations. At 84, mapper 50 selects the root node, creates a base table, and assigns a first column of the base table for the root entity.

Applicant respectfully submits that there is nothing in this excerpt, the cited figures, or anywhere else in Draper that discloses or even suggests associating one or more goods or services with one or more nodes and traversing one or more of the multiple nodes to discover a good or service. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database, and does not disclose or suggest associating one or more goods or services with one or more nodes and traversing one or more of the multiple nodes to discover a good or service. For at least this reason, claim 54 is allowable.

Claims 55-56 depend from claim 54 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 54, are neither disclosed nor suggested in the references of record, either singly or in combination with one another.

Claim 57

Claim 57 is a computer-readable medium claim and is of comparable scope to claim 54. Hence, for at least the reasons set forth with respect to claim 54 being allowable, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claims 58-60

Claim 58 recites a method of building context-aware data structures [emphasis added]:

- receiving input from a source that specifies information pertaining to physical and/or logical entities;
- processing the information to define a hierarchical tree structure having a context, the tree structure comprising multiple nodes each of which represent a separate physical or logical entity, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;
- linking at least one of the multiple nodes to a node of another tree structure having a context and multiple nodes that represent physical and/or logical entities, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,
- the tree structures being configured for traversal in a manner that enables context to be derived from one or more of the nodes.

In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office cites to figure 2B, figure 6B, column 5, lines 1-12, and column 4, lines 10-28 and 42-67, reproduced below, in support of its argument.

Entity A is said to be the parent entity of entities B, E, G and H. Entities B, E, G and H are said to be the children entities of entity A. Similarly, entity B is said to be the parent entities for entities C and D respectively, whereas entities E, G and the two instantiations of entity H are the parent entities for the two instantiations of entity F, and the two instantiations of entity I respectively. The two instantiations of entity F, and the two instantiations of entity I are said to be the children entities of E, G and the two instantiations of entity H respectively. Col. 4, lines 10-28.

The approach is said to be a normalized organization of the relational tables. FIG. 4 illustrates description of correspondence between the semi-structured data and the generated structured organization, in accordance with one embodiment. As illustrated, description 56' is a meta-table having a number of row entries 72, one for each pair of parent and child nodes. Meta-table 56' includes seven columns 74a-74g, storing identifiers for the in-context, the parent node, the child node, the out-context, the storage table, the parent column and the child column. That is, columns 74a-74d track the hierarchical information of semi-structured data 54, and columns 74e-74g track the storage location information of the structured organization 52. Additionally, meta-table 56' includes a number of miscellaneous columns (not shown) for storing various flags and annotations. These miscellaneous flags and annotations include e.g. a flag that distinguishes between an "element" versus an "attribute", an annotation that denotes whether a child can occur more than once with respect to a parent, another annotation that denotes whether the child must occur at all. Each row entry 72 always contains information in columns 74b-74c and 74e-74g. Row entries 72 for parent-child pairs involving multiple instantiations also contain information in the "context" columns 74a and 74d. Where applicable, row entries 72 also include the aforementioned flags and annotations. Col. 4, lines 42-67.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database, and does not disclose or suggest individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Accordingly, for at least this reason, this claim is allowable.

Claims 59-60 depend from claim 58 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 58, are neither disclosed

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nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claim 60 over the combination with Simonetti is not seen to add anything of significance.

Claim 61

Claim 61 recites a system for determining context comprising [emphasis added]:

- one or more computer-readable media; and
- a hierarchical tree structure resident on the media and comprising multiple nodes each of which represent geographical divisions of the Earth, individual nodes comprising an entity identification (EID) that is unique to the node, EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having EIDs that are unique for the associated node;
- wherein at least some of the nodes comprise a node selected from a group of nodes comprising: political entities, natural entities, infrastructure entities, and public places.

In making out the rejection of this claim, the Office argues that Draper discloses EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node. The Office apparently cites to column 5, lines 38-55, and column 6, lines 40-56, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests "individual nodes comprising an entity identification (EID) that is unique to the node, EIDs serving as a basis by which attributes can be assigned to goods or services associated

with an individual node." Draper's disclosure deals with converting semistructured data, such as XML encoded data, to structured data storage, such as an SQL database, and does not disclose or suggest EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node. Additionally, the secondary reference to Simonetti neither discloses nor suggests the claimed subject matter. Accordingly, for at least this reason, claim 61 is allowable.

Claim 62

Claim 62 recites a system for determining context comprising [emphasis added]:

- one or more computer-readable media;
- a first hierarchical tree structure having multiple nodes associated with a first context:
- at least one second hierarchical tree structure having multiple nodes associated with a second context; and
- at least one node from the at least one second hierarchical tree structure being linked with one node on the first hierarchical tree structure by a link that is configured to enable a complete context to be derived from the first and second contexts, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,
- said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;
- wherein the nodes of the first hierarchical tree structure comprise geographical divisions of the Earth;
- wherein the first and the at least one second hierarchical tree structures comprise a plurality of attributes, one of which comprising information that pertains to the tree with which the node is associated.

 In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office again cites to figure 2B, figure 6B, column 5, lines 1-12, and column 4, lines 10-28 and 42-67, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database, and does not disclose or suggest individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Accordingly, for at least this reason, claim 62 is allowable.

Claim 63

Claim 63 recites a computer-implemented method of determining context comprising [emphasis added]:

- accessing first and one or more second hierarchical tree structures
 that are resident on one or more computer-readable media, each tree
 structure having multiple nodes, the nodes of the first hierarchical
 tree structure being associated with a first context, the nodes of the
 one or more second hierarchical tree structures being associated with
 a second context; and
- traversing multiple nodes of at least one of the tree structures to derive a context, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;

wherein the nodes of the first hierarchical tree comprise geographical divisions of the Earth; and wherein the traversing comprises traversing at least one node on

each tree to derive the context.

In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office cites to figure 2B, figure 6B, column 5, lines 1-12, and column 4, lines 10-28 and 42-67, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database, and does not disclose or suggest individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Accordingly, for at least this reason, claim 63 is allowable.

Claim 64

Claim 64 recites one or more computer-readable media having computer-readable instructions thereon which, when executed by a handheld, mobile computing device, cause the computing device to [emphasis added]:

 access first and second hierarchical tree structures, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first location context, the nodes of the second hierarchical tree structure being associated with a

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second location context, at least one node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure; and

• traverse at least one node of each tree structure to derive a location context, at least one node in a traversal path that leads to a root node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office argues that Draper discloses individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. The Office again cites to figure 2B, figure 6B, column 5, lines 1-12, and column 4, lines 10-28 and 42-67, reproduced above, in support of its argument.

Applicant respectfully submits that there is nothing in these excerpts, or anywhere else in Draper, that discloses or even suggests individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Draper's disclosure deals with converting semi-structured data, such as XML encoded data, to structured data storage, such as an SQL database, and does not disclose or suggest individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services. Accordingly, for at least this reason, this claim is allowable.

$\underline{Conclusion}$

All of the claims are in condition for allowance. Applicant respectfully requests a Notice of Allowability be issued forthwith. If the Office's next anticipated action is to be anything other than issuance of a Notice of Allowability, Applicant respectfully requests a telephone call for the purpose of scheduling an interview.

Respectfully Submitted,

Dated: 4/7/04

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